IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,

Plaintiff,

vs. 4:05-CV-00329-TCK-SAJ

TYSON FOODS, INC., et al,

Defendants.

- -

THE VIDEOTAPED DEPOSITION OF ROBERT TAYLOR, PhD, produced as a witness on behalf of the Defendants in the above styled and numbered cause, taken on the 15th day of July, 2008, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

EXHIBIT
tabbies
16

A That's the way they ended up, yes.
Q Okay.
A Well, out 3 or 400 miles or so.
Q Okay. Let's look at Table 4 in your May 15th report. 01:26PM
A Okay.
Q Tell me how the numbers in this table were calculated.
A Table 4?
Q It's Page 38 of your May 15th report. 01:27PM
A Okay. Well, the exact formula that I used are all included in the Excel spreadsheet that I provided that had some of the appendix tables and I think even some that I didn't include in this appendix, but they're in the Excel file. I took -- 01:27PM
I assumed that the Carreira numbers applied to '07. It was published in late '07. I couldn't target the precise year. I assumed that it applied to 2007, and Table 4 has a real calculation that overlays a nominal calculation. I had these costs only for 01:27PM
'07, and nowhere do we have a consistent time series on litter hauling costs by year going back in time.
So one calculation was to take these numbers and use a transportation cost index published by BLS to hindcast them back to 1988, and then this also 01:28PM

involves supplemental application of commercial fertilizer to meet the nitrogen and potassium needs of rice not met by the litter, so I had a calculation there that followed exactly the Arkansas budgeted information. So the real calculation that overlays that other just puts everything in current dollars, and the Consumer Price Index was used for that, which is the standard way of doing it, real versus nominal dollars. 01:28PM

Q Okay. So in the description of Table 4 where it says real in 2008 dollars -- 01:29PM

A Uh-huh.

Q -- that brings all of these calculations up to 2008?

A Right, without any interest of any kind. 01:29PM

Q Okay. So let me understand. A 2008 dollar versus a 1988 dollar?

A Uh-huh.

Q What's the relationship between those two?

A Well, inflation. To give you another example, I remember paying $2 a gallon for gasoline in Montana in 1980 something. Adjusted for inflation, $4 now is less, and this is just an inflation adjustment, so that the number for hauling it 200 miles in 1988, which is 14 cents, that is expressed 01:29PM 01:30PM

MR. RIGGS: Was the Excel file produced to the defendants?

MS. XIDIS: Should have been, yeah.

A Should have been.

Q All right. Let's look at Table 5. 01:32PM

A Okay. New or old?

Q Let's look at new first.

A Okay.

Q Before we do that, on Table 4 new, are the numbers in this table calculated using the numbers 01:33PM that were contained in the Table 2 on Page 36?

A Yes, as I have described.

Q Okay. So it's my understanding that this table would assume that litter -- that the grower was paid the $7 a ton for the litter? 01:33PM

A If you're talking in real 2008 dollars.

Q Okay. If that's what the calculation or the number represents, that's what we're discussing. What's the significance of the 1988 date?

A None in particular. I just kind of drew a 01:34PM line on how far to go back. I didn't know whether it should be '05 or 1970, but twenty years back just seemed far enough to me, and the plaintiff attorneys didn't indicate otherwise.

Q Okay. So what factors did you take into 01:34PM

consideration in determining this 20-year time period?

A Nothing really, except I know you can only go back so far in time, statute of limitations, and I figured this was going back too far, and about 1988 is when it became -- when it was recognized that we had a problem in phosphorus in high density poultry areas and, you know, that date is when I went to Auburn, and it was sometime shortly after that when I learned that the issue of concern to NRCS and others was not nitrogen in poultry as it had been in the '70's but phosphorus, so -- but there's no really hard reasoning behind picking 1988. 01:34PM 01:35PM

Q Okay. Your Table 4 has various calculations for 200 miles, 250 miles, up to 325 miles. 01:35PM

A Uh-huh.

Q Your prior opinion was based on a 100-mile radius from the watershed?

A That was just getting it out of the watershed, and that was an example, and a footnote said it can be more or less depending on hauling distance. 01:35PM

Q Okay. So the distances contained in the Table 4, is that related to this assumption that this litter would be hauled to eastern Arkansas?

A Well, here rather than picking one point 100 01:36PM

miles and then simply saying you can scale it up or down, I picked these different distances, and those distances are -- I approximated as distance to the different counties in the delta area identified in the Carreira study. 01:36PM

Q Okay.

A So Lonoke is the closest and Poinsett is the most distant as I recall.

Q Let's go on to Table 5. Explain how these calculations were made. 01:37PM

A Okay. The Carreira study indicated how much could be hauled, used on rice in the different areas. So just assuming we wanted to haul out 350,000 tons, not all of that could be used in Lonoke County, the closest one. You could go up to 01:37PM all of the rice acreage in that county, and then you would go to the next one over and end up with some of it up in I think Poinsett County.

So I took the numbers on how much could be used on rice in each area, and that is behind these 01:37PM calculations, and those distances are definitely in the spreadsheet, I mean the quantities, how much could be applied in each county is in the Carreira study and reflected in my spreadsheet calculation.

Q Okay. Explain to me how the numbers in Table 01:38PM

4 were used in Table 5.

A This shows the -- Table 4 shows the per ton cost, like the first number, the per ton cost of hauling it 200 miles in 1988, and so there's only a certain amount we could use in 200 miles, and let's say 350,000 tons. Not all of that can be used within 200 miles. So I take the 14 cents times what can be used in 200 miles, and then we have more, and we go to the 250 miles, which is 569, and keep moving in that fashion until we get the aggregate cost of hauling 350,000 tons out in 1988. 01:38PM 01:39PM

Q Okay, and this is assuming that all of this is being transported from the Illinois River watershed to these various counties in eastern Arkansas?

A Identified in the Carreira study. 01:39PM

Q As part of your analysis, did you analyze whether there was a viable market in eastern Arkansas for 350,000 tons of litter?

A I only did what Carreira and others did and assumed that there was a viable market there and that it would be used on the same acreage of rice that they indicated in their study. 01:39PM

Q Okay, and did Carreira -- the Carreira report did not cover a 20-year period; is that correct?

A That's correct. 01:40PM

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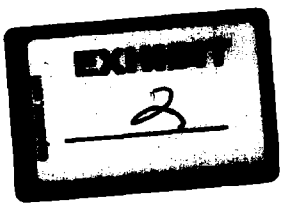
STATE OF OKLAHOMA, ex rel, W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA, and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,	)	
Plaintiff,	)	CASE NO. 05-CV-329-GKF- SAJ
V.	)	
TYSON FOODS, TYSON POULTRY, INC., TYSON CHICKEN, INC., COBB-VANTRESS, INC., AVIAGEN, INC., CAL-MAINE FOODS, INC., CAL-MAINE FARMS, INC., CARGILL, INC., CARGILL TURKEY PRODUCTS, LLC, GEORGE'S, INC., GEORGE'S FARMS, INC., PETERSON FARMS, INC., SIMMONS FOODS, INC. AND WILLOWBROOK FOODS, INC.	)	
Defendants.	)	

REPORT OF DR. C. ROBERT TAYLOR

1. I am the Alfa Eminent Scholar and Professor of Agricultural Economics at Auburn University, Auburn, AL. This position is equivalent to the rank of Distinguished University Professor. I hold a B.S. degree in agricultural economics from Oklahoma State University, a M.S. degree in economics and agricultural economics from Kansas State University, and a Ph.D. degree in agricultural economics from the University of Missouri-Columbia. I have held tenured positions at the University of Illinois, Montana State University and Texas A&M University in addition to Auburn University. I served on the Executive Board and Foundation Board of the American Agricultural Economics Association, which is the national association for agricultural economists, from 1998-2001. I have served on the editorial board of four scholarly journals, including the American Journal of Agricultural Economics, which is the premier journal in my profession. I am co-author of one graduate textbook book,



75. Results from the Carreria, et al, detailed economic optimization model show poultry waste from the IRW being used exclusively on rice in the Delta. Results from the model indicate the acreage of rice in each of four counties on which poultry waste would be applied. They assumed a central collection point in the IRW would be Siloam Springs and/or Prairie Grove. The acreage and distance of each rice area from the central collection area in the IRW can be used to approximate their methodology for purpose of establishing the net cost defendants avoided by not responsibly transporting excess litter out of the IRW.[108]

76. Table 3 gives the nutrient requirements of rice as shown in the 2008 cost of production budget published by the University of Arkansas.[109] The nutrient analysis of poultry litter shown in Table 3 is that used in Carreira, et al, and assumed here.

Table 3. Nutrient Assumptions

Nutrient	Nutrient Requirements of Rice (lbs/acre)	Nutrient Analysis of Litter (lbs/T)*	Nutrient Supply from Litter	Nutrients Needed from Supplemental Commercial Fertilizer (lbs/ac)	Conversion Factor
N	153	42	44.2	108.8	1
P2O5	60	57	60.0	0.0	0.437
K2O	90	52	54.7	35.3	0.83
Tons Litter/Acre of Rice based on P max			1.053		

* Nitrogen analysis assumes 60 lbs of N/T but that only 70% is available (from Carreira, et al, 2007)

77. It is assumed that 70% of the 60 lb/T of nitrogen in litter (Table 3) would be available for plant use.[110] Consistent with the Carreira, et al, study, it was assumed that the litter application rate on rice was 1.05 T/ac, which exactly meets the phosphorus needs of rice, but does not fully meet the nitrogen or potassium requirements.

78. Table 4 shows my calculation of the costs defendants avoided by not transporting poultry waste from the IRW for use in rice production in eastern Arkansas as related

[108] Calculations shown in this report could be refined somewhat by using the optimization model in the Carreira, et al, study using historical fertilizer prices and not just using current prices and costs as they did.
[109] Brad Watkins, Jeffrey Hignight, and Charles E. Wilson, Jr., "Estimated 2008 Costs of Production, Rice Silt Loam, Eastern Arkansas," University of Arkansas Division of Agriculture, Cooperative Extension Service, downloaded at http://www.aragriculture.org/crops/rice/budgets/2008/AG1078.pdf
[110] Carriera, et al, also consider a scenario in which only 50% of the nitrogen in litter would be available. The Oklahoma NRCS Information Sheet on Poultry Litter Manure Transfer Incentives assumes that 60% of the nitrogen would be available. Economic estimates presented in this report can be refined if it is determined that the assumed 70% is inappropriate. The higher the percentage of available nitrogen in litter, the higher the value of litter applied to nitrogen deficient crops.

to hauling distances.[111] A positive value in this table indicates costs that the defendants' avoided by not transporting litter outside the IRW, while a negative value indicates a profit or benefit not realized because they did not transport litter outside the watershed.

Table 4. Real (in 2008 dollars) Difference Between Total Cost of Applying Litter Supplemented with Commercial Fertilizer and Total Cost of Using Commercial Fertilizer Only in Rice Production in Eastern Arkansas ($/T) for a hauling distance of:

Year	200	250	275	325
1988	-$0.14	$5.69	$8.61	$14.43
1989	-$1.13	$4.71	$7.63	$13.46
1990	$7.31	$13.18	$16.12	$22.00
1991	$4.70	$10.47	$13.35	$19.12
1992	$8.09	$13.81	$16.67	$22.39
1993	$10.88	$16.60	$19.46	$25.18
1994	$9.78	$15.52	$18.40	$24.15
1995	$5.05	$10.84	$13.73	$19.52
1996	$3.63	$9.41	$12.30	$18.09
1997	$5.43	$11.13	$13.98	$19.68
1998	$7.81	$13.32	$16.07	$21.58
1999	$9.27	$14.76	$17.51	$23.01
2000	$12.45	$18.09	$20.92	$26.56
2001	$7.54	$13.07	$15.83	$21.36
2002	$13.22	$18.61	$21.31	$26.70
2003	$9.03	$14.46	$17.17	$22.61
2004	$7.26	$12.73	$15.47	$20.95
2005	$2.08	$7.73	$10.56	$16.20
2006	-$0.40	$5.29	$8.14	$13.83
2007	-$10.04	-$4.39	-$1.56	$4.09
2008	-$47.90	-$42.09	-$39.19	-$33.38

79. Table 4 shows that it would have been profitable to transport poultry waste out of the IRW in 2006 up to slightly over 200 miles. This result is consistent with the Carreira, et al, finding that it was profitable to transport loose litter to rice fields closest to the IRW (Lonoke County, AR), but not to more distant rice fields in Arkansas (Monroe and Poinsett Counties), assuming fertilizer prices in 2006.

80. Results in Table 4 indicate that with the higher fertilizer prices in 2007, it would have been profitable to haul poultry waste generated in the IRW to eastern Arkansas

[111] Calculations shown in Table 4 can be refined with more detailed data on location of specific fields outside the IRW that might safely and effectively use poultry waste, crops grown on those fields, specific nutrient requirements of each crop, and soil fertility information on each field. Such refinement might necessitate setting up a complex economic optimization model similar to that employed by Carreira, et al.